(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 011 797 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
21.10.2026 Bulletin 2026/43

(21) Application number: **21213917.4**

(22) Date of filing: **11.12.2021**

(51) International Patent Classification (IPC):
B65D 6/00 *(2006.01)* ***B65D 43/02*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B65D 43/0212; B65D 7/42; B44D 3/127; B65D 2543/00092; B65D 2543/00277; B65D 2543/00555; B65D 2543/00564; B65D 2543/00638; B65D 2543/00685; B65D 2543/0075; B65D 2543/00796; B65D 2543/00898; B65D 2543/00972

(54) **CONTAINER SYSTEM**

BEHÄLTERSYSTEM

SYSTÈME DE CONTENEUR

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **11.12.2020 PT 2020116931**

(43) Date of publication of application:
15.06.2022 Bulletin 2022/24

(73) Proprietor: **Colep Packaging Portugal, S.A.**
3730-423 Vale de Cambra (PT)

(72) Inventor: **GOMES OLIVEIRA, JOSÉ LUÍS**
4535-060 LOUROSA (PT)

(74) Representative: **do Nascimento Gomes, Rui**
J. Pereira da Cruz, S.A.
Rua Vítor Cordon, 10-A
1249-103 Lisboa (PT)

(56) References cited:
DK-A- 200 801 055
FR-A- 379 273
GB-A- 471 119
US-A- 3 170 590

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 4 011 797 B1

Description

Technical field

[0001] This application relates to a container system, particularly a light weight pail, comprising a container body and lid. The container system of the present application is suitable for storing paint and other such substances, as well as other contents.

Background art

[0002] Container systems for storing substances, such as oils, resins, varnish, paint, stains, powders and foodstuffs such as syrups are already known in the art. These types of containers are substantially cylindrical and often made of sheet metal, wherein the side wall of the container is formed from a suitably bent piece of sheet metal by making a longitudinal seal using, for example, welding, bending, folding and curling techniques well known in the art. The bottom end of this type of container is closed by another sheet of metal, and they often comprise a circular reusable lid made of metal sheet to close and seal the container.

[0003] Such containers are usually referred as metal tins, metal cans, or metal pails.

[0004] The patent document EP 2578511 A discloses a releasable container system for storing paint and other like materials, which can be repeatedly opened and closed without damaging or distorting the lid and/or container. The solution disclosed therein is a container body with a metal side wall having an upper edge portion outwardly curled over to form a rim. The system also comprises a lid with an outer portion with a sealing portion adapted to engage with at least a portion of an upper surface of the container rim and extending around the container rim. This system further comprises a dedicated opening tool for separating the lid from the container body which hooks under and engages a portion of the lid rim, thereby displacing the engaged portion of the lid rim radially outwards to release its grip on the container rim and enable separation of the lid from the container. Patent application GB471119A discloses a container with a flanged cover having a curled edge that snaps over a projection on the container wall, with an abutment near the curl's lower edge to facilitate removal of the cover by levering. A sealing gasket may be provided for hermetic closure. Patent application US3170590A discloses a pail-type shipping container with an improved angled bail construction, where the bail loops are bent inwardly to allow the bail to clear the cover and nest compactly against the container, facilitating bead-to-bead stacking without interference.

[0005] However, although advantageous over the prior art, this solution revealed to have problems. The lid can be often open by accident when its outer portion connects with a raised surface or another container system when stored in close proximity. The dedicated tool can also be misplaced or lost and the use of other tools to open the lid can damage or deform the container.

[0006] Hence, there is a need for a container that ensures a good sealing, that the lid is not opened by accident and an that has easy opening without the need for a dedicated tool to open the container.

[0007] Thus, the present container system is an advantageous modification of the container of GB 471119 A , and aims to overcome the shortcomings found in the art. Particularly, this invention aims to provide a container comprising features that beneficiate the logistic process and the opening of the container, in contrast to prior art systems in which tools to lever off the lid often result in distortion of both lid and container body.

Summary

[0008] The present application relates to a container system according to claim 1, which comprises a container body with a base and a lid, the container body comprising a side wall with an upper edge portion outwardly curled over to form a container rim; the lid comprises an inner portion and an outer portion surrounding the inner portion, the outer portion comprising a sealing portion adapted to engage with a sealing surface of the container rim, the outer portion further comprising an outer wall portion with a lid edge portion inwardly curled over to form a lid rim; wherein:

- the container body further comprises a bead that is vertically adjacent to, and arranged below, the container rim, and radially projects outwards and around the side wall;
- the lid further comprises at least one portion of the outer wall portion projected outwards defining an insert point.

[0009] In one embodiment the bead has a circular cross section.

[0010] In another embodiment the container body further comprises a second bead that is vertically adjacent and arranged below the bead.

[0011] The bead of the container body and the lid have approximating diameters.

[0012] In one embodiment the insert point has a length from 13 to 15 mm and height from 4 to 6 mm.

[0013] In one embodiment the container body has a cylindrical shape or a partly frusto-conical shape.

[0014] In another embodiment the sealing portion has an inverted U shape and/or is substantially semicircular in cross section.

[0015] When closed the sealing portion forms a seal against a sealing surface of the container rim.

[0016] In one embodiment the sealing surface is substantially semicircular in cross section.

[0017] In another embodiment the sealing surface

comprises a sealant.

[0018] In one embodiment the outer wall portion extends in a straight line, directly downwards from an outer arm of the inverted U-shaped of the sealing portion.

[0019] In another embodiment the lid further comprises a supporting wall which extends downwardly from an inner arm of the inverted U-shaped of the sealing portion.

[0020] In yet another embodiment the lid further comprises a groove with the support wall, an inner wall and an annular wall portion.

General description

[0021] The present application provides a container system, particularly, but not exclusively, a container system based on sheet metal container bodies. The presently disclosed container system is suitable to store paint and other such substances, although it can also store a variety of other contents, liquids, solids, powders, gels, etc. The present invention is related to technical features in the container system that provide advantages over the prior art.

[0022] The application aims to provide a container system for storage having a relatively simple construction, which forms a good air-tight seal, and which can be repeatedly opened and closed, forming a good seal on each closure, without damaging or distorting the lid and/or container. The system is therefore reusable over a long period of time, and can be re-filled a large number of times, for example.

[0023] The container system comprises a container body having a closed base, referred to as container bottom, and a side wall extending upwardly from the bottom, to define with the bottom an interior volume for storing contents.

[0024] The side wall has an upper edge portion outwardly curled over (i.e. with respect to a longitudinal axis of the container body, or equivalently with respect to the interior of the container body) to form a container rim (which thus extends radially outwards from a portion of the metal side wall immediately adjacent the edge portion) which defines a mouth of the container body.

[0025] In some aspects of the system the base and side wall may be integrally formed, for example formed from a single metal sheet, or they can be independently formed and joined together by techniques known in the art, such as welding and /or seaming.

[0026] The side wall may be provided by a seamless metal tubular structure, or may incorporate one or more seams, such as an axial seam running from the bottom of the container body to the container rim.

[0027] In a preferred aspect of the disclosed container, the same side wall is substantially cylindrical. Alternatively, other shapes and sizes of container bodies can be considered, including, but not limited to: tapered cans; conical-shaped bodies; tulip-shaped bodies.

[0028] In one aspect of the system, the side wall has a substantially circular cross section, is substantially straight, having no kinks other than beads, also understood as ridges, at the upper portion of the container body.

[0029] In certain aspects, the upper edge portion of the side wall is curled over through an angle of no less than 270 degrees. In other aspects, the upper edge portion of the side wall is curled over such that its leading edge substantially meets the side wall. Curling over the upper edge portion to these extents provides the advantage that the resultant container rim presented to a user is smooth, and the user is not exposed to any sharp edge. Furthermore, the leading edge may be tucked away, helping to inhibit the formation of rust. Additionally, the curled-over rim is substantially rigid. Additionally, curling over the upper edge portion to this extent enables the container rim to provide a curved upper surface which can be engaged by the sealing means on the container lid and also a curved lower surface which can be engaged and gripped by the lid rim. The curved upper surface of the container rim provides a guiding surface which can gradually force the lid rim radially outwards as the lid is pressed into the closed position.

[0030] In certain aspects, the outwardly curled over upper edge portion forming the container rim is generally circular in cross section.

[0031] The side wall of the container body may be formed from a wide variety of materials. In one aspect, the side wall may be formed from sheet steel, tin-plated steel, a non-ferrous metal, such as aluminum, or any other suitable rigid metal according to the intended use of the container system. The side wall may also be coated, painted, or otherwise covered with other materials, such as a non-metallic paint, but not limited to. In the case that the container wall is formed from a ferrous material, it is advisable to apply a covering or coating to inhibit the formation of rust. Appropriate coverings or coatings may be applied to the side walls to prevent contamination of the contents, such as liquids, to be stored in the container by the wall material, or to prevent reactions between the stored content and the side wall.

[0032] The container further comprises a removable lid adapted to be pressed onto the container body to a closed position in which the lid seals said mouth. The lid comprises an inner portion and an outer portion surrounding said inner portion, the outer portion comprising a sealing portion adapted to engage with at least a portion of an upper edge of the container rim, when the lid is in the closed position to form a seal between the lid and container body, the seal extending around the container rim, an outer wall portion connected to the sealing portion and adapted to extend, when the lid is in the closed position, down past an outer edge of the container rim, and a lid edge portion, extending from (i.e. connected to) a lower end of the outer wall portion

and being inwardly curled over to form a lid rim (which thus extends radially inwards), the lid rim being arranged to engage and grip (i.e. exert a gripping force on) a portion of a lower surface of the container rim when the lid is in the closed position to hold the lid in place.

[0033] In one aspect of the system, the lid inner portion and outer portion are formed from a single material sheet.

[0034] The lid may be coated, painted, or otherwise covered with a material or substance to suit a particular application.

[0035] The sealing portion of the lid comprises a sealing surface adapted to form said seal with the upper surface of the container rim such that said seal extends over at least an upper outer quadrant of the container rim surface. Thus, an extensive seal is provided, without needing an insert, ring, or gasket in the lid. The lid material is supported by the underlying container rim surface (outer, upper quadrant) so that the lid is not damaged when trying to open it. In certain aspects, the seal may have even greater extent, extending over 180 degrees, for example, in embodiments employing sealing surfaces having semi-circular cross sections. In certain aspects, the sealing portion has an inverted U shape. In certain aspects, the sealing portion has a substantially semicircular cross section.

[0036] In an aspect of the system, the sealing surface of the lid and the sealing surface of the container rim are adapted to conform to one another. For example, the upper surface of the container rim may have a substantially semicircular cross section, and the downward facing inner surface of the sealing portion may be adapted to conform to the upper surface of the container rim. Thus, the sealing surface of the lid and the sealing surface of the container rim may, in cross section, have the same radius of curvature (at least when in the sealed, closed position). In certain aspects, the radius of curvature of the lid sealing surface may be arranged so as to be slightly smaller than that of the container rim sealing surface when the lid is separated from the container, such that as the lid is applied to the container the sealing portion of the lid has to bend slightly and then grips the rim sealing surface as a result of its resilience.

[0037] Advantageously, this conformity enables an extensive seal to be formed between the sealing portion and the container rim, and furthermore results in the container rim supporting the sealing portion from below when the lid is in the closed position. The curved upper (i.e. outer) surface of the sealing means then provides a smooth curved surface. The close support of the underlying container rim enables the operation to be performed without distorting the lid or container body.

[0038] In certain aspects, the outer portion of the lid extends from an outer arm of the inverted U. In certain aspects, the outer wall portion is substantially cylindrical. In certain aspects, the outer wall portion extends substantially in a straight line from the sealing means to the lower end of the outer wall portion.

[0039] In certain aspects, the lid edge portion is curled over through an angle of at least 270°. In certain aspects, the lid edge portion is curled over such that its leading edge substantially meets an inner surface of the outer wall portion. By curling over the lid edge portion to these extents, no sharp edges are presented to a user, and in certain embodiments oxidation/rusting can be inhibited. Furthermore, a smooth, curved surface of the lid rim is provided for engaging and gripping the container rim when the lid is in the closed position.

[0040] In certain aspects, the lid edge portion curled over the form the lid rim has a substantially circular cross section. In certain aspects, the lid rim is annular, for example at least substantially circular.

[0041] In certain aspects, the container rim and lid rim are both substantially circular, the inner radius of the lid rim being smaller than the outer radius of the container rim.

[0042] Thus, in order to press the lid into the closed position, the lid rim has to be deflected at least slightly radially outwards to fit over the widest part of the container rim and then spring back into position, to grip an underside of the container rim and hold the lid in place.

[0043] In certain aspects, the container rim and lid rim are each substantially circular in cross section, and the engagement between the lid rim and container rim when the lid is in the closed position is such that a portion of an outer lower quadrant of the container rim is in contact with a portion of an inner upper quadrant of the lid rim.

[0044] As will be appreciated, the force exerted by the lid rim on the container rim when the lid is in the closed position has a radial component inwards and an axial component upwards. In certain aspects, the container rim and lid rim are each substantially circular in cross section. In certain such aspects a ratio of the diameter (i.e. cross-sectional diameter) of the container rim to the lid rim is in the range 6.0:3.0 to 7.0:2.0, and optionally is substantially 6.5:2.5.

[0045] In certain aspects in which the container and lid rims are substantially circular in cross section, the body rim cross sectional diameter is in the range 1 mm to 9mm and the lid rim cross sectional diameter is in the range 1 mm to 9mm. In certain aspects, the lid further comprises a supporting wall extending down from an inner edge of the sealing portion and arranged to engage and support from inside an upper end portion of the side wall when the lid is in the closed position. However, in alternative embodiments a support wall may not be provided.

[0046] In certain aspects, the sealing portion of the lid has an inverted U shape, and the supporting wall extends down from an inner arm of the U. In certain aspects, the support wall is substantially cylindrical or substantially frusto-conical.

[0047] In certain embodiments, the support wall extends downwardly from the sealing means for a distance D1, the outer wall portion extends downwardly from the sealing means for a distance D2. In certain embodiments D1 is greater than D2.

[0048] In certain aspects the support wall may be substantially cylindrical, such that it forms an interference fit with an upper end portion or section of the side wall when the lid is fitted to the container in a closed position. Thus, the support wall can provide a supporting inner ring, supporting the upper end of the container and increasing the rigidity of the assembled structure. In certain aspects, rather than the support wall being perfectly cylindrical, it may be frusto-conical, i.e. as the support wall extends downwardly from the sealing means it can also taper radially inwards. Thus, the lower surface of the support wall (on the underside of the lid) can provide a ramped surface for engaging an inner surface of the container rim as the lid is placed on it, thereby assisting in guiding the lid into the closed position as it is pressed down.

[0049] Advantageously, in certain aspects, the support wall extends down from the sealing means substantially lower than does the outer wall portion which carries the lid rim. Thus, the support wall and lid rim may be arranged such that as the lid is introduced to the container body the support wall engages an inner surface of the outer wall (or an inner portion of the container rim) and guides the lid into place before or at the same time as the lid rim engages an upper outer surface of the container rim. Thus, the support wall provides internal support to the container body (i.e. to the upper section of the side wall and/or to the container rib) while the lid is being pressed into the closed position, which requires the lid rim to be displaced radially outwards, and so at the same time results in the lid rim exerting a force radially inwards from the container rim.

[0050] In certain aspects, the supporting wall is an outer wall of a channel formed in the lid, the channel comprising an inner wall, facing the support wall.

[0051] In certain aspects, said exterior surface of the sealing means has an inverted U shape. In certain aspects, said exterior surface is substantially semicircular in cross section. In certain aspects, said exterior surface comprises an outer half of the semicircular surface.

[0052] After use, the lid can be resealed on the container body by pressing down on the entire lid sealing means simultaneously, or by pressing down on one point to clip the lid rim into place at that point, and then working around the lid circumference until the lid rim grips around the entire container rim. The lid forms a good air-tight seal, has no sharp edges besides the insert point, and can be repeatedly opened and closed, forming a good seal on each closure. The insert point is not projected outwardly enough to cause injury to the user and is discreet being an integral part of the lid.

[0053] The lid is therefore reusable over a long period of time and allows the container to be re-filled several times.

[0054] The present invention is related to further modifications made to the body and lid of the container system disclosed above.

[0055] As disclosed, the side wall of the body comprises an upper edge portion with a rim that is curled outwards and defines the mouth of the container body. The upper part of the container body advantageously further comprises a bead that is vertically adjacent to the rim.

[0056] The bead of the container body is arranged below the curled rim, it projects outwards of the side wall of the container body and circumferentially around the side wall. In a preferred aspect this bead is substantially cylindrical.

[0057] Alternatively, other shapes and sizes can be considered according to the shape and size of the body.

[0058] When the lid is closed, an outer portion of the lid is arranged such that it becomes adjacent to this bead. In accordance with the invention, it is appreciated that the bead of the container body and the lid have substantially approximating diameters This closed arrangement allows to provide protection against overlapping of the container's upper edge when the containers are stored or transported in proximity of each other, or during the logistic process, and avoids accidental opening of the lid.

[0059] The outer portion of the lid, particularly the outer wall of the lid, further comprises at least one portion projected outwards, which is suitable as an insert point. This insert point provides access to a volume defined between the lid outer wall and the curled rim of the container body when the container is closed.

[0060] The insert point allows to use commonly available tools that are able to engage the insert point, for example a screwdriver, to open the lid of the container. It provides easier means to open the container without damage. Advantageously, the lid can thus be removed from the container body without permanently distorting or damaging the lid, or the container body, due to the existence of the insert point.

[0061] In this manner, there is no need for a dedicated tool to open the container.

[0062] Overall, the presently disclosed container system provides several advantages in comparison with the art:

- Easy to open system
- Reusable
- Ideal for tintometric machines
- Safer solution (no crimps, less corrosion)
- Less raw material consumption making the container lighter
- Ideal for nonhazardous products
- Recyclable
- Stackable

- Complete usage of the product

[0063] Another advantage of the disclosed system is that the lid construction enables it to be made from thinner sheet metal than is required for lids of the prior art systems. Similarly, embodiments can utilize container bodies which have side walls incorporating no other ridges or kinks (except for the beads), which are therefore more resistant to deformation under axial compression, and which can also be made of thinner sheet metal material than containers for prior art systems, and thus the container can be have a light weight.

Brief description of drawings

[0064] For easier understanding of this application, figures are attached in the annex that represent the preferred forms of implementation which nevertheless are not intended to limit the technique disclosed herein.

Figure 1 illustrates partly in cross section an embodiment of the container system of the present application, wherein the lid shows a cross section portion on the right side and the container body shows a cross section on the left side.

Figure 2 illustrates a cross section of the container rim of the container body of the present application.

Figure 3 illustrates a cross section of an embodiment of the lid of the container system of the present application.

Figure 4 illustrates a cross section of an embodiment of a portion of the lid of the container system of the present application.

Figure 5 illustrates a portion of a cross section of an embodiment of the container system of the present application with the lid engaging the container body.

Figure 6 illustrates a portion of a cross section of an embodiment of the container body of the present application.

Figure 7 illustrates a top view of the inside of an embodiment of the lid of the present application, where D represents an amplification of the area of the lid comprising the insert point.

Figure 8 illustrates an embodiment of the container system of the present application.

Description of embodiments

[0065] Now, preferred embodiments of the present application will be described in detail with reference to the annexed drawings. However, they are not intended to limit the scope of this application.

[0066] The present container system is an advantageous modification of the container of GB 471119 A.

[0067] According to Figure 1 , the container system (1) of the present application comprises a container body (2) with a base (4) and a lid (3). The area designated as A shows a cross section of the lid (3), showing the inside of the lid. The area designated with B shows an insert point (26).

[0068] The container body (2) has a side wall (6), which in some embodiments has a generally cylindrical shape or a can have a partly frusto-conical shape.

[0069] In some embodiments the base (4) can have a circular shape having its edges bent around the lower or bottom rim of the side wall (6) to form a seal or sealing rib. Other forms of attachment of the base to the side wall (6) known in the art can also be implemented.

[0070] The side wall (6) extends, when the container body (2) is resting on the base (4), upwardly from the base (4) to define, together with the base (4), an interior volume V for contents.

[0071] The side wall (6) has an upper edge portion (7) which has been outwardly curled over (i.e. with respect to a longitudinal axis C of the container body), to form a container rim (8). This rim (8) defines a mouth of the container body (2). The rim (8) thus extends radially outwards from the portion of the side wall (6).

[0072] In this example of Figure 1 and 2 , the upper edge portion (7) is curled over to an extent such that its leading edge (9) substantially meets an inner surface of the curled upper edge portion (7). Thus, the outer edge portion (10) has been curled over through an angle in excess of 270 degrees, and the resultant container rim (8) is substantially circular in cross section.

[0073] Figure 2 shows the container rim (8) with the upper edge portion (7) in more detail, and the container rim (8) has an outer surface which can be divided into an inner upper quadrant Q1, an outer upper quadrant Q2, an outer lower quadrant Q3, and an inner lower quadrant Q4. In this example, the upper quadrants Q1 and Q2 together form a sealing surface (11) of the container rim (8), which seals against the correspondingly shaped sealing surface of the lid (3). This sealing surface (11) of the container rim is substantially semi-circular in cross section, and extends, uninterrupted, around the mouth of the container.

[0074] The container body (2) may have a pair of housings (12) diametrically opposed from the container body, attached to and extending radially outwards from the side wall (6), these housings being adapted to receive the ends of a handle (13).

[0075] Figures 3 and 4 show a lid (3) for releasable attachment to the container body (2). The lid (3) comprises an inner portion (14), which in this example is dished downwards, and an outer portion (15) surrounding the inner portion (14).

[0076] In some embodiments, the lid is integrally formed such that the inner and outer portions are integral parts of a single component.

[0077] The lid outer portion (15) comprises a sealing portion (16) which is adapted to engage with an upper surface, i.e. the corresponding sealing surface (11) of the container rim (8). The sealing portion (16) in this example has an inverted U shape and/or is substantially semi-circular in cross section.

[0078] This cross section is adapted to conform with the substantially semi-circular upper surface of the container rim (8).

[0079] The lid (3) comprises a sealing surface (17) that is substantially semicircular in cross section, extends, uninterrupted, around the lid (3), and overall is substantially toroidal. The close, interference fit, between the inner sealing surface of the sealing portion (16) and the upper, external sealing surface (11) of the container rim (8) provides a seal between the lid (3) and container body (2) when the lid is in the closed position, as shown in Figure 5 .

[0080] The lid (3) at the outer portion (15), also comprises an outer wall portion (18) which extends in a straight line, directly downwards in the example of Figures 3 and 4 , from the outer arm of the inverted U-shaped sealing portion (16). In this example the outer wall portion (18) is substantially cylindrical overall, and extends, uninterrupted, around the perimeter of the lid (3).

[0081] The lid (3) comprises a lid edge portion (19) which is a continuation of the outer wall portion (18) and which has been inwardly curled over to form a lid rim (20). Thus, this lid rim (20) extends radially inwards from the outer wall portion (18). The arrangement is such that when the sealing portion (16) abuts the container rim (8), the outer wall portion (18) extends down past the container rim (8) such that the lid rim (20) engages and grips a portion of a lower surface of the container rim (8) (i.e. when the lid is in the closed position), as shown in Figure 5 . The force exerted on the container rim (8) by the lid rim (20) holds the lid (3) in place.

[0082] The lid rim (20) is generally circular in cross section. The external surface of the lid rim (20) can therefore be described as generally comprising four quadrants, a lower outer quadrant LQ1, a lower inner quadrant LQ2, an upper inner quadrant LQ3, and an upper outer quadrant LQ4. When the lid (3) is in the closed position, quadrant LQ3 of the lid rim (20) is in contact with and exerts a force on quadrant Q3 of the container rim (8).

[0083] Thus, when the lid (3) is first placed on the container body (2), before pressing it down to adopt the closed position, the lid rim (20) firstly engages the sealing surface (11) of the container rim (8). In particular, quadrant LQ2 of the lid rim (20) engages quadrant Q2 of the container rim (8). Then, as the lid (3) is pressed down, the container rim (8) is displaced radially outwards, bending the outer wall portion (18) such that the lid rim (20) can pass over the widest part of the container rim (8). As the lid (3) is pushed further down, the lid rim (20) then springs back towards its normal position, gripping underneath the container rim (8) and holding the lid (3) in place with the sealing portion (16) forming a seal against the sealing surface (11) of the container rim (8).

[0084] Lid (3) may also comprise an inner or support wall (21) which extends downwardly from an inner arm of the inverted U-shaped sealing portion (16). In this example, the support wall (21) extends further down from the sealing portion (16) than does the outer wall portion (18). The support wall (21) provides support to the inner surface of the side wall (6) of the container body (2) as the lid (3) is being pushed into the closed position, and when the lid (3) is in the closed position. The support wall (21) is advantageous in that it lends rigidity to the assembly of the container body (2) and lid (3) in the closed position, helping to prevent distortion of the container rim (8) and lid (3) when an opening tool is used to detach the lid (3). In this example, the support wall (21) is an outer wall of a groove (22) provided in the lid (3). An inner wall (23) of the groove faces the support wall (21), and a base of the groove is defined by an annular wall portion (24).

[0085] The present invention is related to further modifications made to the container body (2) and the lid (3).

[0086] As shown in Figures 1 , 5 and 6 , the side wall (6) of the body further comprises a bead (5) that is vertically adjacent to the container rim (8). The bead (5) is arranged below the container rim (8) and radially projects outwards and around the side wall (6). In a preferred aspect the bead (5) is has a circular cross section. Alternatively, other shapes and sizes can be considered according to the shape and size of the body.

[0087] The container body (2) can further comprise a second bead (25) that is vertically adjacent and arranged below the bead (5). The second bead (25) has a circular cross section and radially projects outwards and around the side wall (6). This second bead (25) aids with the stacking and grouping of several container systems (1), avoiding superimposition of the lids and accidental openings.

[0088] When the container body (2) is closed, an outer portion of the lid, the lid rim (20), is arranged such that it becomes vertically adjacent to the bead (5), as shown in Figure 5. As referred, the bead (5) of the container body (2) and the lid (3) have approximating diameters .

[0089] This closed arrangement allows to provide protection against overlapping of the container's upper edge when the containers are stored or transported in proximity of each other and avoids accidental opening of the lid.

[0090] Furthermore, the sealing surface (17) on the

lid (3), which is the inner portion of the sealing portion (16), has a substantially semi-circular cross section. In the sealing surface (17) a sealant can be applied. In one embodiment the sealant in the sealing surface (17) is polyurethane or other compounds for the same effect.

[0091] As shown in Figures 1 and 7 and the amplification D of Figure 7 , the lid (3) further comprises at least one portion of the outer wall portion (18) projected outwards, which is suitable as an insert point (26). This insert point (26) is adapted to provide access to an inner volume defined between the outer wall portion (18) and the container rim (8) of the body when the container is closed.

[0092] The insert point (26) allows to use commonly available tools that are able to engage with the insert point (26), for example a screwdriver, to open the lid (3). The tool can engage between the lid sealing surface (17) and container rim sealing surface (11), accessed through the insert point (26), and open the lid (3).

[0093] In one embodiment the insert point (26) has a length from 13 to 15 mm and height from 4 to 6 mm. The thickness in this insert point (26), measuring from the outer wall portion (18), is from 0,6 to 1 mm.

[0094] The insert point (26) provides easier means to open the container without damage to the lid or the body and without using a dedicated tool.

[0095] Throughout the description and claims of this specification, the words "comprise" and "contain" and variations of the words, for example "comprising" and "comprises", means "including but not limited to", and is not intended to (and does not) exclude other moieties, additives, components, integers or steps.

[0096] This description is of course not in any way restricted to the forms of implementation presented herein and any person with an average knowledge of the area can provide many possibilities for modification thereof without departing from the general idea as defined by the claims. The preferred forms of implementation described above can obviously be combined with each other.

Claims

1. Container system (1) comprising a container body (2) with a base (4) and a lid (3), the container body (2) comprising a side wall (6) with an upper edge portion (7) outwardly curled over to form a container rim (8) which defines a mouth of the container body (2); the lid (3) comprises an inner portion (14) and an outer portion (15) surrounding the inner portion (14), the outer portion (15) comprising a sealing portion (16) adapted to engage with a sealing surface (11) of an upper edge of the container rim (8) when the lid (3) is in the closed position to form a seal between the lid (3) and container body (2), the outer portion (15) further comprising an outer wall portion (18) with a lid edge portion (19) inwardly curled over to form a lid rim (20) which extends radially inwards, the lid rim (20) being arranged to engage and grip, exerting a gripping force on, a portion of a lower surface of the container rim (8) when the lid (3) is in the closed position to hold the lid (3) in place;

the lid (3) thereby being a removable lid (3) adapted to be pressed onto the container body (2) to a closed position in which the lid seals said the mouth of the container body (2), such seal extending around the container rim,
wherein the container body (2) further comprises a bead (5) that is vertically adjacent to, and arranged below, the container rim (8), and radially projects outwards and around the side wall (6); **characterised in that**

- the lid (3) further comprises at least one portion of the outer wall portion (18) projected outwards defining an insert point (26), wherein the bead (5) of the container body (2) and the lid (3) have approximating diameters.

2. Container system (1) according to the previous claim, **characterized in that** the bead (5) has a circular cross section.

3. Container system (1) according to any of the previous claims, **characterized in that** the container body (2) further comprises a second bead (25) that is vertically adjacent and arranged below the bead (5).

4. Container system (1) according to any of the previous claims, **characterized in that** the insert point (26) has a length from 13 to 15 mm and height from 4 to 6 mm.

5. Container system (1) according to any of the previous claims, **characterized in that** the container body (2) has a cylindrical shape.

6. Container system (1) according to any of the claims 1-4, **characterized in that** the container body (2) has a partly frusto-conical shape.

7. Container system (1) according to any of the previous claims, **characterized in that** the sealing portion (16) has an inverted U shape and/or is substantially semi-circular in cross section.

8. Container system (1) according to the previous claim, **characterized in that** the sealing surface (11) is substantially semicircular in cross section.

9. Container system (1) according to claim 8, **characterized in that** the sealing surface (11) comprises a sealant.

10. Container system (1) according to any of claims 7-9, **characterized in that** the outer wall portion (18) extends in a straight line, directly downwards from an outer arm of the inverted U shape of the sealing portion (16).

11. Container system (1) according to any of claims 7-10, **characterized in that** the lid (3) further comprises a supporting wall which extends downwardly from an inner arm of the inverted U shape of the sealing portion (16).

12. Container system (1) according to any of the previous claims, **characterized in that** the lid (3) further comprises a groove (22) with a support wall (21), an inner wall and an annular wall portion (24).

Patentansprüche

1. Behältersystem (1), umfassend einen Behälterkörper (2) mit einem Boden (4) und einem Deckel (3), wobei der Behälterkörper (2) eine Seitenwand (6) mit einem oberen Randabschnitt (7) aufweist, der nach außen umgebogen ist, um einen Behälterrand (8) zu bilden, der eine Öffnung des Behälterkörpers (2) definiert; wobei der Deckel (3) einen inneren Abschnitt (14) und einen den inneren Abschnitt (14) umgebenden äußeren Abschnitt (15) umfasst, wobei der äußere Abschnitt (15) einen Dichtungsabschnitt (16) aufweist, der so ausgelegt ist, dass er mit einer Dichtfläche (11) eines oberen Randes des Behälterrandes (8) in Eingriff kommt, wenn sich der Deckel (3) in der geschlossenen Position befindet, um eine Dichtung zwischen dem Deckel (3) und dem Behälterkörper (2) zu bilden, wobei der äußere Abschnitt (15) ferner einen Außenwandabschnitt (18) mit einem Deckelrandabschnitt (19), der nach innen umgebogen ist, um einen Deckelrand (20) zu bilden, der sich radial nach innen erstreckt, wobei der Deckelrand (20) so eingerichtet ist, dass er mit einem Abschnitt einer Unterseite des Behälterrandes (8) in Eingriff kommt und diesen ergreift, wobei er eine Greifkraft auf diesen ausübt, wenn sich der Deckel (3) in der geschlossenen Position befindet, um den Deckel (3) an Ort und Stelle zu halten.

wobei der Deckel (3) somit ein abnehmbarer Deckel (3) ist, der so ausgelegt ist, dass er auf den Behälterkörper (2) in eine geschlossene Position gedrückt werden kann, in der der Deckel die Öffnung des Behälterkörpers (2) abdichtet, wobei sich diese Abdichtung um den Behälterrand herum erstreckt, wobei der Behälterkörper (2) ferner einen Wulst (5) aufweist, die vertikal an den Behälterrand (8) angrenzt und unterhalb desselben angeordnet ist, und radial nach außen und um die Seitenwand (6) herum vorsteht;
dadurch gekennzeichnet, dass

- der Deckel (3) ferner mindestens einen nach außen vorstehenden Abschnitt des Außenwandabschnitts (18) aufweist, der eine Einsteckstelle (26) definiert, wobei die Wulst (5) des Behälterkörpers (2) und des Deckels (3) annähernd gleiche Durchmesser aufweisen.

2. Behältersystem (1) nach dem vorstehenden Anspruch, **dadurch gekennzeichnet, dass** die Wulst (5) einen kreisförmigen Querschnitt aufweist.

3. Behältersystem (1) nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** der Behälterkörper (2) ferner einen zweiten Wulst (25) aufweist, der vertikal an den Wulst (5) angrenzt und unterhalb desselben angeordnet ist.

4. Behältersystem (1) nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Einsteckstelle (26) eine Länge von 13 bis 15 mm und eine Höhe von 4 bis 6 mm aufweist.

5. Behältersystem (1) nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** der Behälterkörper (2) eine zylindrische Form aufweist.

6. Behältersystem (1) nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** der Behälterkörper (2) eine teilweise kegelstumpfförmige Form aufweist.

7. Behältersystem (1) nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** der Dichtungsabschnitt (16) eine umgekehrte U-Form aufweist und/oder im Querschnitt im Wesentlichen halbkreisförmig ist.

8. Behältersystem (1) nach dem vorstehenden Anspruch, **dadurch gekennzeichnet, dass** die Dichtfläche (11) im Querschnitt im Wesentlichen halbkreisförmig ist.

9. Behältersystem (1) nach Anspruch 8, **dadurch gekennzeichnet, dass** die Dichtfläche (11) ein Dichtmittel umfasst.

10. Behältersystem (1) nach einem der Ansprüche 7 bis 9, **dadurch gekennzeichnet, dass** sich der Außenwandabschnitt (18) in einer geraden Linie

direkt nach unten von einem äußeren Schenkel der umgekehrten U-Form des Dichtungsabschnitts (16) erstreckt.

11. Behältersystem (1) nach einem der Ansprüche 7 bis 10, **dadurch gekennzeichnet, dass** der Deckel (3) ferner eine e Stützwand aufweist, die sich von einem inneren Schenkel der umgekehrten U-Form des Dichtungsabschnitts (16) nach unten erstreckt.

12. Behältersystem (1) nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** der Deckel (3) ferner eine Nut (22) mit einer Stützwand (21), einer Innenwand und einem ringförmigen Wandabschnitt (24) aufweist.

Revendications

1. Système de récipient (1) comprenant un corps de récipient (2) avec un fond (4) et un couvercle (3), le corps de récipient (2) comprenant une paroi latérale (6) présentant une partie de bord supérieure (7) enroulée vers l'extérieur pour former un rebord de récipient (8) qui définit une ouverture du corps de récipient (2) ; le couvercle (3) comprend une partie interne (14) et une partie externe (15) qui entoure la partie interne (14), la partie externe (15) comprenant une partie d'étanchéité (16) adaptée pour venir en prise avec une surface d'étanchéité (11) d'un bord supérieur du rebord de récipient (8) lorsque le couvercle (3) est dans la position fermée pour former un joint d'étanchéité entre le couvercle (3) et le corps de récipient (2), la partie externe (15) comprenant en outre une partie de paroi externe (18) présentant une partie de bord de couvercle (19) enroulée vers l'intérieur pour former un rebord de couvercle (20) qui s'étend radialement vers l'intérieur, le rebord de couvercle (20) étant agencé pour venir en prise avec une partie d'une surface inférieure du rebord de récipient (8) et la serrer, en exerçant sur celle-ci une force de serrage, lorsque le couvercle (3) est dans la position fermée, afin de maintenir le couvercle (3) en place ;

le couvercle (3) étant ainsi un couvercle amovible (3) adapté pour être pressé sur le corps de récipient (2) jusqu'à une position fermée dans laquelle le couvercle assure l'étanchéité de ladite ouverture du corps de récipient (2), ladite étanchéité s'étendant autour du rebord de récipient, le corps de récipient (2) comprenant en outre un bourrelet (5) qui est verticalement adjacent au rebord de récipient (8) et disposé au-dessous de celui-ci, et qui fait saillie radialement vers l'extérieur et autour de la paroi latérale (6) ;

caractérisé en ce que

- le couvercle (3) comprend en outre au moins une portion de la partie de paroi externe (18) faisant saillie vers l'extérieur définissant un point d'insertion (26), le bourrelet (5) du corps de récipient (2) et le couvercle (3) ayant des diamètres proches.

2. Système de récipient (1) selon la revendication précédente, **caractérisé en ce que** le bourrelet (5) présente une section transversale circulaire.

3. Système de récipient (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le corps de récipient (2) comprend en outre un deuxième bourrelet (25) qui est verticalement adjacent au bourrelet (5) et disposé au-dessous de celui-ci.

4. Système de récipient (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le point d'insertion (26) présente une longueur de 13 à 15 mm et une hauteur de 4 à 6 mm.

5. Système de récipient (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le corps de récipient (2) présente une forme cylindrique.

6. Système de récipient (1) selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** le corps de récipient (2) présente une forme partiellement tronconique.

7. Système de récipient (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la partie d'étanchéité (16) présente une forme en U inversé et/ou est sensiblement semi-circulaire en section transversale.

8. Système de récipient (1) selon la revendication précédente, **caractérisé en ce que** la surface d'étanchéité (11) est sensiblement semi-circulaire en section transversale.

9. Système de récipient (1) selon la revendication 8, **caractérisé en ce que** la surface d'étanchéité (11) comprend un produit d'étanchéité.

10. Système de récipient (1) selon l'une quelconque des revendications 7 à 9, **caractérisé en ce que** la partie de paroi externe (18) s'étend en ligne droite, directement vers le bas à partir d'un bras externe de la forme en U inversé de la partie d'étanchéité (16).

11. Système de récipient (1) selon l'une quelconque des revendications 7 à 10, **caractérisé en ce que** le couvercle (3) comprend en outre une paroi de support qui s'étend vers le bas à partir d'un bras interne de la forme en U inversé de la partie d'étanchéité (16).

12. Système de récipient (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le couvercle (3) comprend en outre une rainure (22) avec une paroi de support (21), une paroi interne et une partie de paroi annulaire (24).

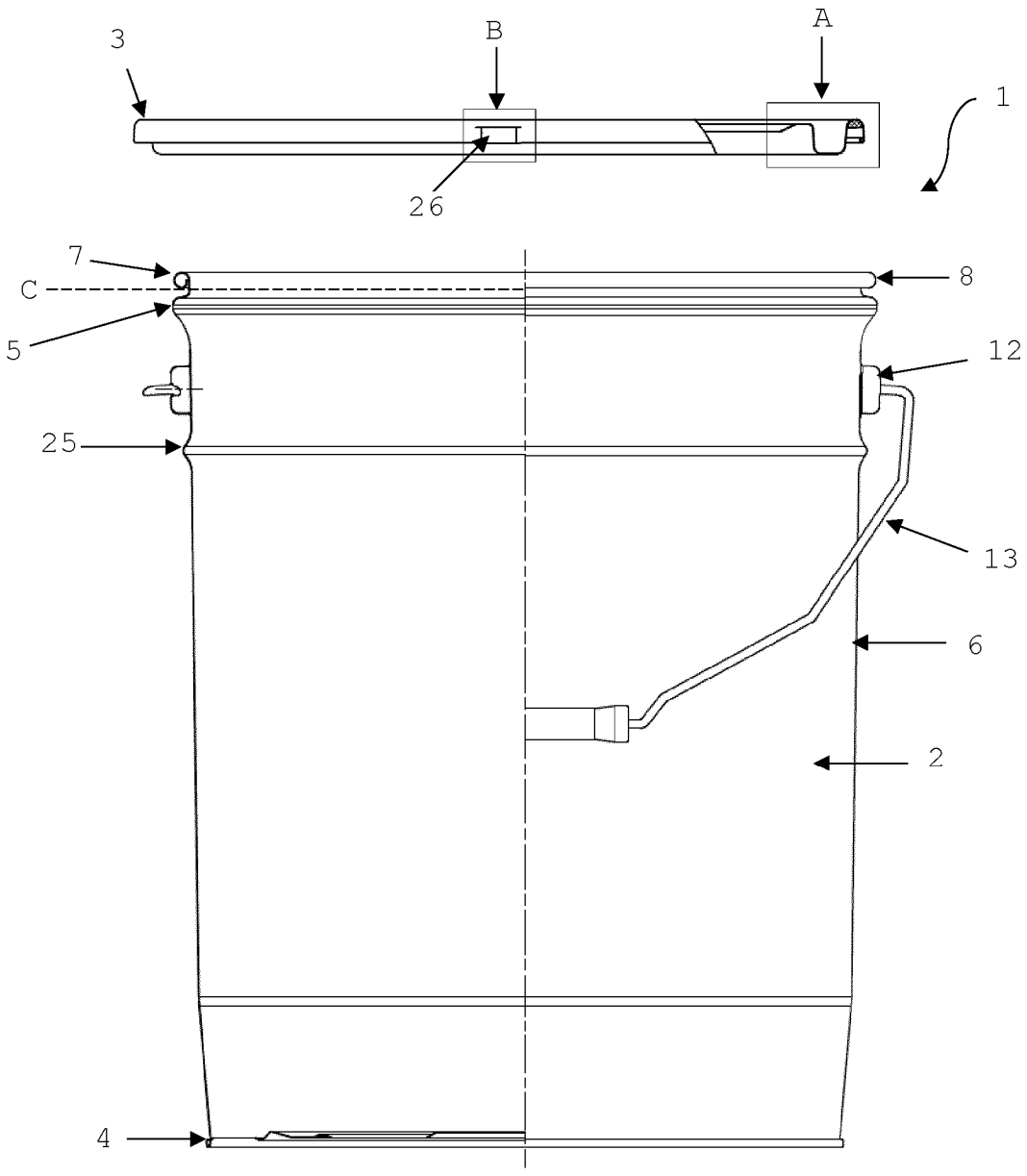


Figure 1

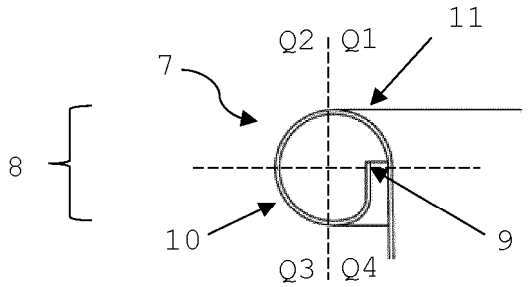


Figure 2

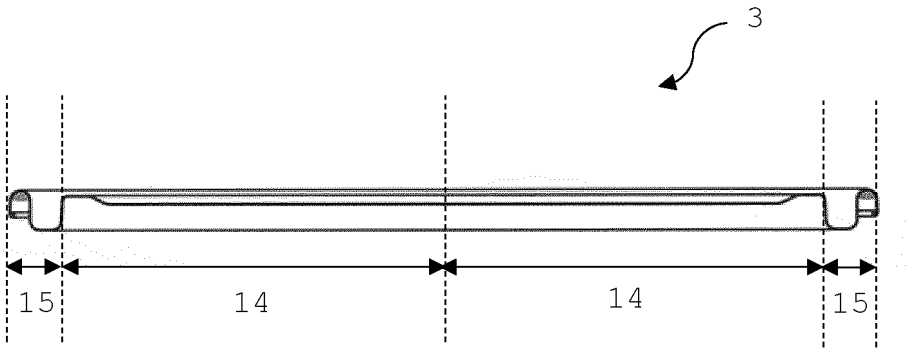


Figure 3

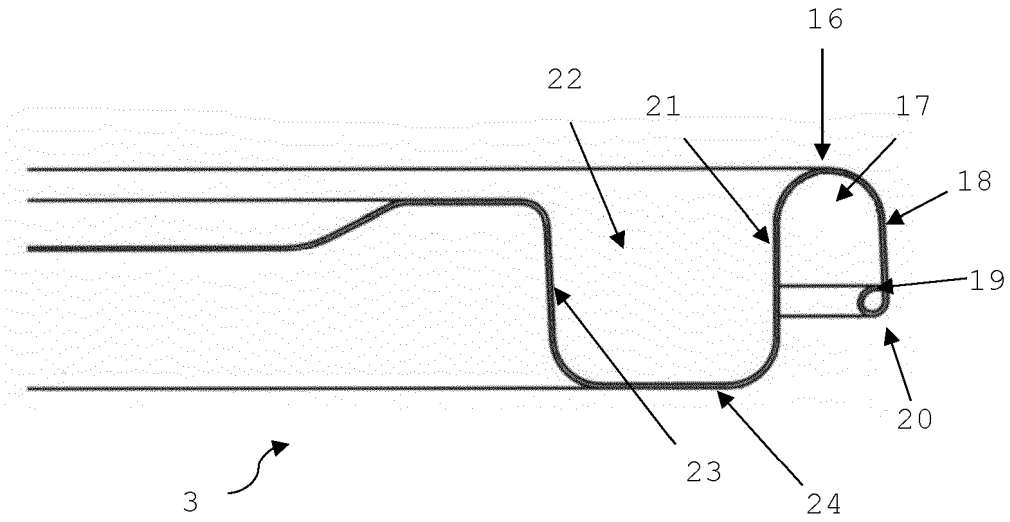


Figure 4

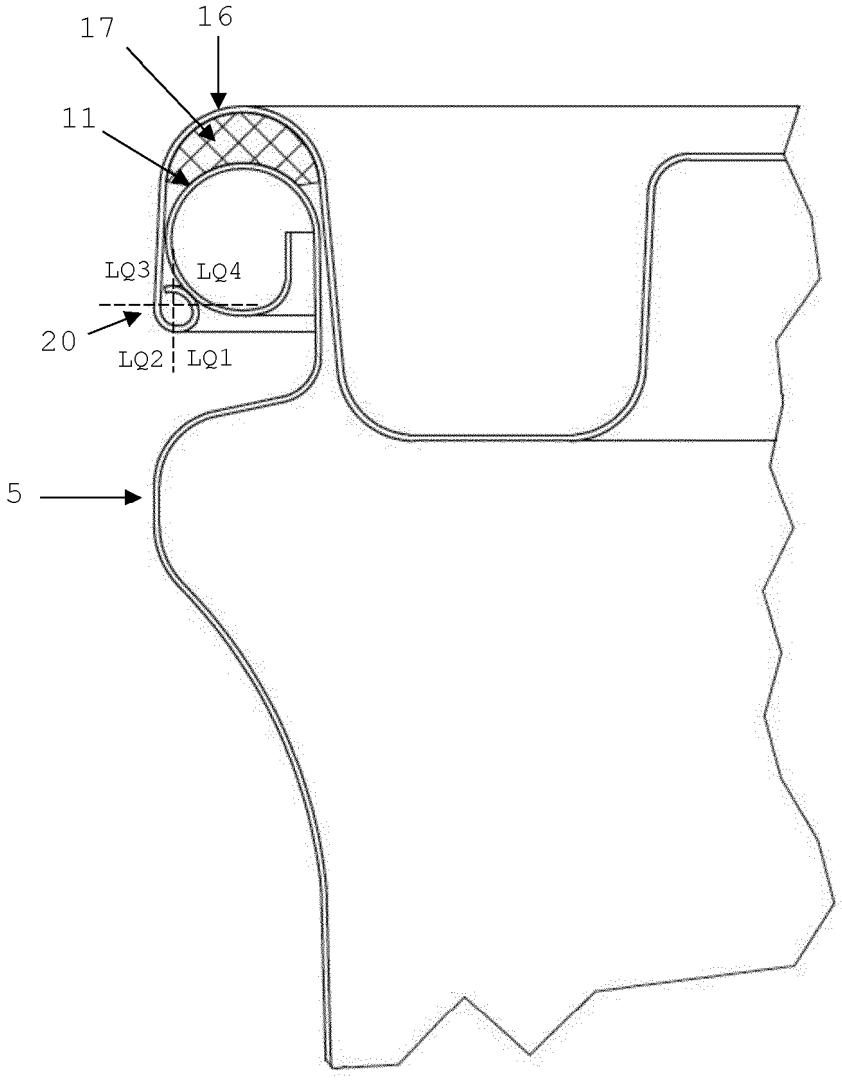


Figure 5

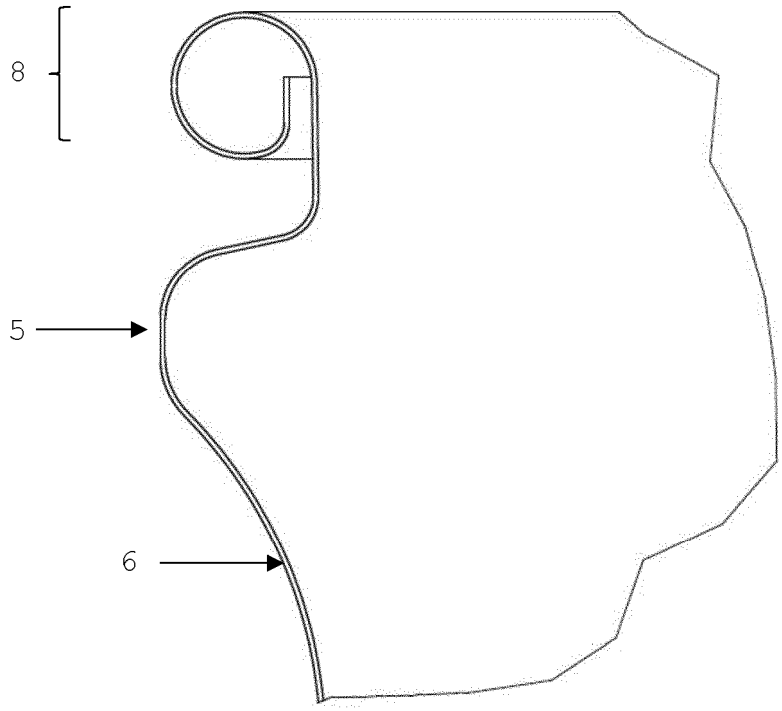


Figure 6

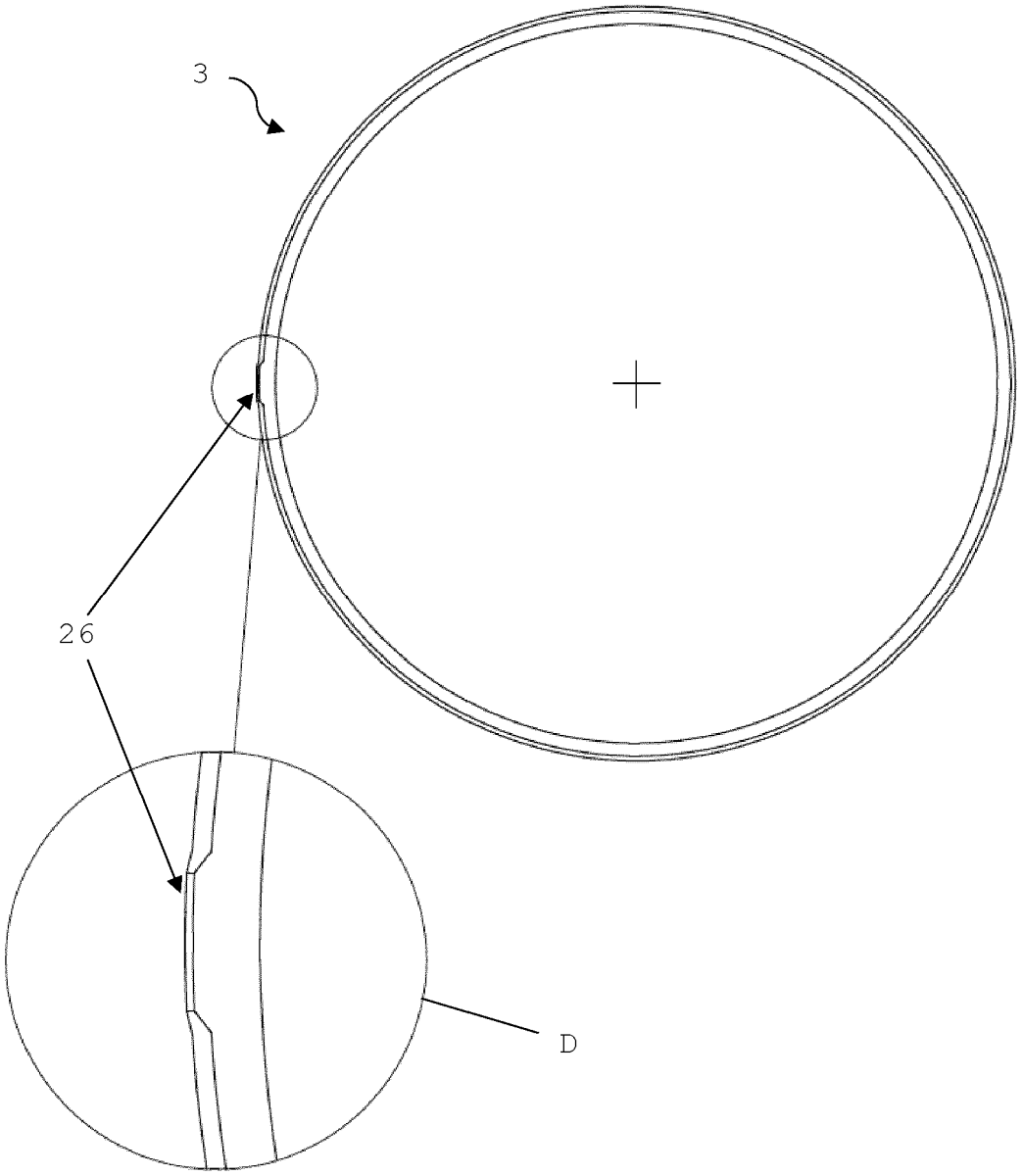


Figure 7

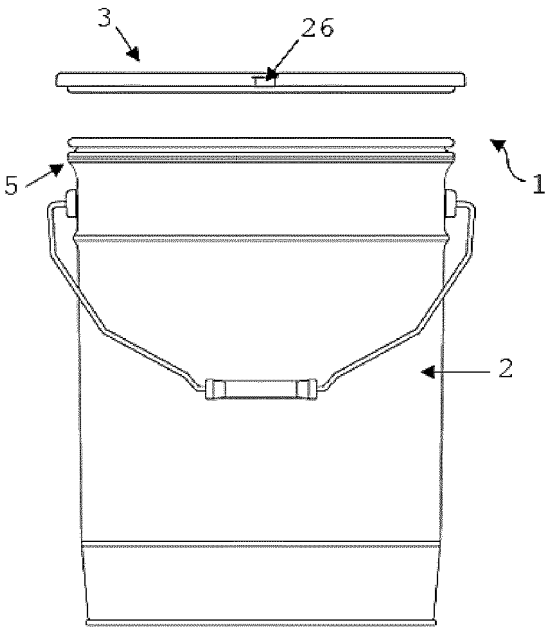


Figure 8

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 2578511 A **[0004]**
- GB 471119 A **[0004] [0007] [0066]**
- US 3170590 A **[0004]**